

CLAIMS

[00124] We claim:

1. A method for treating crops against fungal diseases, comprising applying a fungicidal composition comprising an effective amount of a ketol-acid reductoisomerase inhibitor, wherein the ketol-acid reductoisomerase is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3.
2. The method of claim 1, wherein the ketol-acid reductoisomerase inhibitor is dimethylphosphinoyl-2-hydroxyacetate.
3. The method of claim 1, wherein the ketol-acid reductoisomerase inhibitor is N-hydroxy-N-isopropylloxamate.
4. A fungicidal composition comprising:
a ketol-acid reductoisomerase inhibitor, wherein the ketol-acid reductoisomerase is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3;
and
a second fungicidal compound.

5. A method for producing a fungicidal composition, comprising providing a ketol-acid reductoisomerase inhibitor, wherein the ketol-acid reductoisomerase is selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2 and SEQ ID NO:3.
6. A method for identifying fungicidal compounds, comprising identifying compounds that inhibit the enzymatic activity of a ketol-acid reductoisomerase having an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:3, wherein inhibition of ketol-acid reductoisomerase activity indicates a fungicidal compound.
7. The method of claim 6 further comprising determining whether said compounds that inhibit the enzymatic activity of a ketol-acid reductoisomerase inhibit fungal growth and pathogenesis.
8. The method of claim 6, wherein said identifying compounds that inhibit the enzymatic activity of a ketol-acid reductoisomerase comprises:
 - a) in the presence of magnesium, NADPH, and a substrate, contacting a test compound with a ketol-acid reductoisomerase having an amino acid sequence selected

from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:3; and

b) measuring the ketol-acid reductoisomerase enzymatic activity.

9. The method of claim 8, wherein said substrate is 2-acetolactate (AL) or 2-aceto-2-hydroxybutyrate (AHB).
10. The method of claim 8, wherein said measuring the ketol-acid reductoisomerase enzymatic activity comprises measuring the decrease in absorption of NADPH at 340nm.
11. The method of claim 6, wherein said identifying compounds that inhibit the enzymatic activity of a ketol-acid reductoisomerase comprises:
 - a) expressing in a host organism a ketol-acid reductoisomerase having an amino acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:3;
 - b) purifying the ketol-acid reductoisomerase produced by said host organism;
 - c) in the presence of magnesium, NADPH, and a substrate, contacting a test compound with said purified ketol-acid reductoisomerase; and

d) measuring the ketol-acid reductoisomerase enzymatic activity.

12. The method of claim 11, wherein said substrate is 2-acetolactate (AL) or 2-aceto-2-hydroxybutyrate (AHB).

13. The method of claim 11, wherein said measuring the ketol-acid reductoisomerase enzymatic activity comprises measuring the decrease in absorption of NADPH at 340nm.